National Science Education Standards, Grades 5–8 by the National Research Council, 1996

	Basic Skills			
Science Standard	Altimeter angles	Flagpole height	Structure estimation	NASA connection
Unifying Concept and Processes				
Evidence, models, and organization				●
Change, constancy, and explanation	●	●	●	
Science as Inquiry				
Abilities necessary to do scientific inquiry	●	●	●	
Understanding scientific inquiry				●
Physical Science				
Motions and forces				●
Transfer of energy				●
Science and Technology				
Understanding science and technology			●	●
Science in Personal and Social Perspectives				
Risk and benefits				●
Science and technology in society				●
History and Nature of Science				
Nature of science				●
History of science				●

Mathematics Principles and Standards for Schools, Grades 5–8 by the National Council of Teachers of Mathematics, 2000

	Basic Skills			
Mathematics Standard	Altimeter angles	Flagpole height	Structure estimation	NASA connection
Number and Operations				
Representing numbers		●	●	
Meanings of operations	●	●		
Compute fluently	●	●	●	
Algebra				
Mathematical models	●	●		
Geometry				
Apply transformation	●	●		
Use visualization	●	●	●	●
Measurement				
Measurable attributes	●	●	●	
Appropriate techniques, tools, formulas	●	●	●	
Problemsolving				
Build new math knowledge	●	●	●	●
Solve problems that arise	●	●	●	
Apply appropriate strategies	●	●	●	
Connections				
Apply math in contexts outside of math	●	●	●	●
Representation				
Use representations to model world phenomena		●	●	●

National Science Education Standards, Grades 5–8 by the National Research Council, 1996

Science Standard	Classroom Activities							
	Collisions Part 1	Collisions Part 2	Marble Run Part 1	Marble Run Part 2	Marble Run Part 3	Marble Run Part 4	Pendulums Part 1	Pendulums Part 2
Unifying Concept and Processes								
Systems, order, and organization	●	●	●	●	●			
Evidence, models, and organization	●	●	●	●	●	●	●	●
Change, constancy, and explanation	●	●	●	●	●	●	●	●
Evolution and equilibrium	●	●						
Science as Inquiry								
Abilities necessary to do scientific inquiry	●	●	●	●	●	●	●	●
Understandings about scientific inquiry	●	●	●	●	●	●	●	●
Physical Science								
Motions and forces	●	●	●	●	●	●	●	●
Transfer of energy		●	●		●			

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Mathematics Standard	Classroom Activities							
	Collisions Part 1	Collisions Part 2	Marble Run Part 1	Marble Run Part 2	Marble Run Part 3	Marble Run Part 4	Pendulums Part 1	Pendulums Part 2
Number and Operations								
Representing numbers				●	●		●	●
Meanings of operations				●	●		●	●
Compute fluently				●	●		●	●
Algebra								
Patterns				●	●			
Represent and analyze				●	●			
Mathematical models	●	●		●	●		●	●
Analyze change				●	●			
Geometry								
Apply transformation				●	●			
Use visualization				●	●			
Measurement								
Measurable attributes				●	●		●	●
Appropriate techniques, tools, formulas				●	●		●	●
Data Analysis and Probability								
Select and use statistical methods					●	●	●	●
Develop and evaluate					●		●	●
Problemsolving								
Build new math knowledge				●	●		●	●
Solve problems that arise	●	●	●	●	●	●	●	●
Apply appropriate strategies	●	●	●	●	●	●	●	●
Connections								
Apply math in contexts outside of math				●	●		●	●
Representation								
Use representations to model world phenomena	●	●		●	●		●	●

National Science Education Standards, Grades 5–8
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Science Standard	Ride Worksheets						
	Bumper Cars: Collisions	Carousel	Free-Fall Ride	Pendulum Ride	Roller Coaster: Floater Hills	Roller Coaster: Initial Hill	Roller Coaster: Loop
Unifying Concept and Processes							
Systems, order, and organization	●	●	●	●	●	●	●
Evidence, models, and organization	●	●	●	●	●	●	●
Change, constancy, and explanation	●						
Science as Inquiry							
Abilities necessary to do scientific inquiry	●	●	●	●	●	●	●
Understanding scientific inquiry	●	●	●	●	●	●	●
Physical Science							
Motions and forces	●	●	●	●	●	●	●
Transfer of energy	●		●				

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Mathematics Standard	Ride Worksheets						
	Bumper Cars: Collisions	Carousel	Free-Fall Ride	Pendulum Ride	Roller Coaster: Floater Hills	Roller Coaster: Initial Hill	Roller Coaster: Loop
Number and Operations							
Representing numbers		●	●	●	●	●	
Meanings of operations		●	●	●	●	●	
Compute fluently		●	●	●	●	●	
Algebra							
Patterns		●		●	●	●	
Represent and analyze				●	●	●	
Mathematical models						●	
Analyze change						●	
Geometry							
Apply transformation			●	●	●	●	
Use visualization			●	●	●		
Measurement							
Measurable attributes		●	●	●	●	●	
Appropriate techniques, tools, formulas		●	●	●	●	●	
Data Analysis and Probability							
Select and use statistical methods					●	●	
Problemsolving							
Build new math knowledge			●	●	●	●	
Solve problems that arise	●	●	●	●	●	●	●
Apply appropriate strategies	●	●	●	●	●	●	●
Connections							
Apply math in contexts outside of math		●	●	●	●	●	
Representation							
Use representations to model world phenomena			●	●	●	●	